

22. *Comptonia asplenifolia*, Ait. Very common on the sand plains near Kilbourn City and on the more barren rock.

23. *Betula papyracea*, Ait. Very common.

24. *Pinus Banksiana*, Lambert. Common on the sandy plains. Known as "Jack Pine."

25. *Pinus Strobus*, L. Growing here, but the Dells are south of the "pine regions" of Wisconsin.

26. *Abies Canadensis*, Michx. Very common.

27. *Habenaria Hookeri*, Torr. Not uncommon with *Linnaea*, *Mitchella*, etc. In fruit, but the blossoms not yet fallen.

Compositæ were not at all abundant, but we notice *Liatris cylindracea*, Michx., and *Aster æstivus*, Ait., on the rock opposite Gates' Ravine.

FERNS.—1. *Polypodium vulgare*, L. Very common.

2. *Adiantum pedatum*, L. Quite common.

3. *Pteris aquilina*, L. Quite common.

4. *Pellaea atropurpurea*, Link. On Sugar Bowl, Steamboat Rock, and similar rocks. As thrifty on the sandstones as when growing on the calcareous rock of Southern Wisconsin.

5. *Asplenium Trichomanes*, L. Very common.

6. *Asplenium thelypteroides*, Michx. Not uncommon.

7. *Phegopteris Dryopteris*, Fee. Very common in the side glens.

8. *Aspidium fragrans*, Swartz. This fern, first found within the limits of the United States by Dr. Parry, is not rare on the Wisconsin.

9. *Aspidium spinulosum*, Swartz. The specimens we saved are not of the type, nor, with certainty, either of the varieties, for the scales of the stipe are entirely brown, but the lobes of the pinnules are spinulose, and not obtuse. Is not this another of the many plants where the so-called "varieties" are merely forms with individual instead of local peculiarities.

10. *Aspidium marginale*, Swartz. Very common.

11. *Cystopteris bulbifera*, Bernh. Not common.

12. *Cystopteris fragilis*, Bernh. Exceedingly common and variable.

13. *Onoclea sensibilis*, L. Not common.

14. *Woodsia Ilceusis*, R. Brown. The most common rock fern of the Dells.

15. *Osmunda regalis*, L. Common in the glens.

16. *Osmunda Claytoniana*, L. The common fern of the glens.

17. *Botrychium Virginicum*, Swartz. Common.

18. *Ceanothorus rhizophyllus*, Link. This undoubtedly grows here, as we have found it on the sandstone further south.

Growing with the ferns is *Lycopodium lucidulum*, Michx.—HERBERT E. COPELAND.

THE INTRODUCTION OF FOREIGN PLANTS.—The subject of the introduction of foreign plants is one of interest to botanists in all sections of the country, and is gradually becoming more so as the geographical distribution of species is being carefully investigated. There are various ways by which this may be effected, and as it can not be told when nor how it may occur, it behooves all lovers of science to keep wide awake, carefully noting the advent of hitherto strangers in Flora's household. The agency of wind is a powerful one in this regard, particularly with respect to that large order, *Compositæ*, the seeds of many of which are furnished with a feathery pappus, and are often carried through the air long distances and deposited on the sides of high mountains, or in the depths of low fertile plains, oftimes a very different location from the usual *habitat*. The flight of birds, doubtless, furnishes one of the most powerful agencies, as their migration, especially near the coast, is sufficiently rapid to carry seeds that will germinate when a proper condition is found. In the southern counties of New Jersey

have been collected many species new to the State, but of frequent occurrence on the coast of Virginia and southward, evidently from seeds carried by birds in their flight coastwise. The importation of grass seed from the west and south has brought us many plants not before met with, and it is highly probable instances of the reverse order may have occurred. A few years ago *Rudbeckia hirta* was almost unknown in Eastern Pennsylvania, though very common throughout the Western States. Now it is to be found on every farm, giving at a distance a golden hue, in strange contrast with the silvery whiteness of the *Leucanthemum vulgare*, now excessively abundant in all our meadows and grass fields.

The large flocks of sheep brought to the Eastern market have been great distributors of those seeds which readily adhere to the wool. I have frequently been shown, in some of our city gardens, plants which have been grown from seeds sent as curiosities from distant localities by absent friends, or gathered as relics of visits to far away places. Even botanists themselves have, perhaps inadvertently, done something in this way. A few years ago I received in exchange a package of plants from Michigan, which I was compelled to allow to remain upon my table for some time before I could get them in their proper place in my herbarium. Fragments, which had become detached in transportation, were all permitted to remain until the whole transfer was complete, when the sweepings from the table, containing many seeds which had fallen were carefully planted, with the satisfaction, in due time, of duplicating some of my specimens.

The arrival, at the various seaport towns on the coast, of ships with ballast from different parts of the world, has probably done the greatest work in this introduction and distribution, and it is one which will continue so long as our country can furnish material to satisfy the wants of other nations. At the port of Philadelphia this has been on a gradual increase for several years, and, as a natural consequence, many plants have collected which probably have not been found elsewhere in the United States. Aubrey H. Smith published in the Proceedings of the Academy of Natural Sciences of Philadelphia, February, 1867, an article "On Colonies of Plants Observed near Philadelphia," the list appended embracing 106 species, most of which were collected where ballast had been deposited. The list was complete, so far as known at that time, but it is not at all unlikely the number has fully doubled since. Many species are to be found year after year, often in increasing numbers, and are therefore entitled to a place in the flora of our country. In fact, all that occur, or have occurred, though it be but for a single season, should, I think, be so placed upon record, for without doubt many of the large number of plants in Gray's Manual which have "Eu." appended have been introduced in this and similar ways, and we may reasonably expect to find, in a few years, some of these more recent arrivals going forth, ably sustaining themselves against wind and weather, to the delight, possibly to the amazement, of some future student of nature. Several species have been collected this year that have not appeared heretofore, and many of former years have not been seen thus far the present season. I will add a few that have been collected, mostly this year, in order to show what has occurred in the vicinity of Philadelphia, and which may now be occurring at other places on the coast. And I desire to call the attention of botanists to these deposits of ballast as the opening of a field at once new and interesting, and which promises good results to the attentive investigator.

Ranunculus philomatidis, Ehrh. One plant only, differing from *R. bulbosus*, L., in having minute tubercles on the carpels.

Sisymbrium Sophia, Linn. Quite abundant. Has occurred for several years.

Sisymbrium Irio, Linn. Collected one plant a few years ago.

Erysimum orientale, Br. A very handsome species, not abundant, but collected on several occasions.

Brassica tenuifolia, Boiss., *B. muralis*, Boiss., *B. monensis*, Hudson, have been collected for several years. *B. tenuifolia* is very abundant this season, and seems to be spreading into the waste grounds.

Alyssum incanum, L. appeared this year for the first, in a limited quantity only.
Reseda Luteola, Linn. Quite abundant this season, and frequent in former years.
Cleome pungens, Willd. Quite abundant two years ago on river dredgings, but rather scarce this season.

Gyandropsis pentaphylla, DC. Two plants this year, collected for the first time.

Silene inflata, Sm., and *S. noctiflora*, Linn., are very common this year.

Lychnis vespertina, Sibth., and the nearly allied *L. diurna*, Sibth. The sterile and fertile plants of both species collected on several occasions.

Tribulus terrestris, L. Very abundant this year, some of the plants covering a space three feet in diameter.

Geranium molle, L. A few plants only this year. Some other species of this genus were collected also.

Erodium cicutarium, L'Her. Abundant, specimens very large.

Medicago fuleata, L. Several plants growing, but not so abundant as *M. sativa*, Willd., while *M. lupulina*, L. is very common in all the waste grounds.

Melilotus parviflora, Desf. Quite abundant, as is also *M. alba*, Lam., and *M. officinalis*, Willd.

Lotus corniculatus, L. Collected last year for the first, one plant only. This year it is quite frequent. I found this species very abundant two years ago on the islands of the west coast of Scotland.

Trifolium hybridum, L., maintains itself year after year, and seems to be increasing in abundance.

Lathyrus Aphaca, L. Two plants this year, found for the first time.

Vigna glabra, Savi. Quite abundant. Did not perfect its fruit for a year or two, but does so now to full satisfaction.

Potentilla reptans, L. Fairly covers the ground in some places, but it does not incline to flower much. *P. Auserina*, L., is very abundant, appearing year after year.

Scandix Pecten, L. One plant collected this year. It has occurred before, but never many specimens.

Richardsonia scabra, St. Hil. Several plants this year, growing very luxuriantly.

Tussilago Farfara, L., has been more abundant this year than usual.

Aster flexuosus, Nutt., *Solidago sempervirens*, L., and *Pluchea camphorata*, DC., all sea coast plants, occur quite frequently. The *Solidago* this year is very robust, some of the plants being fully four feet high.

Acauthospermum ranthioides, DC. Two plants only; collected this year for the first time.

Artemisia Absinthium, L. Several fine plants this year.

Senecio Jacobaea, L., has been growing for several years, but has never flowered till the present season. Some of the specimens come very near *S. crucifolius*, L., to which it is closely allied.

Carduus pycnocephalus, Jacq. A few plants only, in two localities.

Centaurea solstitialis, L. Very scarce. Collected this year for the first time.

Helminthia echioides, Gärtn. Quite common this season. Its peculiar appearance makes it very conspicuous.

Pieris hieracioides, L. One plant only, and that one became destroyed before the fruit fully ripened.

Anagallis carulea, Sm. Quite common; scarcely less so than *A. arvensis*, L.

Plantago Coronopus, L. A few plants only.

Linaria spuria, Willd. Very abundant in two localities, also *L. Elatine*, Desf. The latter, in one locality, covered a space of fully six feet square with its running stems, in a dense mass six inches thick. I had promised myself a full suite of specimens, but on a second visit to the locality, found a ditch had been cut through, entirely destroying every vestige of the plant.

Linaria minor, Desf. Quite abundant.

Antirrhinum Orontium, L. A few plants only.

Scoparia flava, Cham. A single specimen this season. A few years ago it was very abundant.

Lycopus Europæus, L., maintains itself year after year.

Ballota nigra, L. A few plants only.

Stachys arcensis, L., and *S. sylvatica*, L. are frequent this year. Some curious forms of *S. palustris*, L., occur in the dry sand.

Heliotropium Europæum, L. Very robust and wide-spreading specimens.

Heliotropium Curassavicum, L., has frequently occurred, but have seen none this year.

Tournefortia heliotropoides, Hook. A few plants only, all of which became destroyed before the fruit fairly ripened.

Solanum sisymbriifolium, Lam. A few plants only, but they were nearly eaten by the potato bug before the fruit perfected.

Datura Metel, L. A single specimen occurred this season.

Nicotiana longiflora, Cav., has occasionally occurred in waste grounds. *N. glauca*, Graham, a few plants only. A very handsome species indeed.

Chenopodium polyspermum, L. Very abundant this year. *C. vulvaria*, L., quite common. The damp ballast ground seems to be the home for *Chenopodium*, *Amarantus* and *Atriplex* in great quantities and a variety of forms.

Salsola Kali, L., and *Atriplex arenaria*, Nutt., from the sea coast, frequently occur.

Amarantus deflexus, L. One specimen only this year.

Polygonum herniarioides, Delili, from the Mediterranean region. One plant only this season.

Several *Euphorbias* have been collected, *E. serpens*, H. B. K., occurred a few years ago, but none seen this season. *E. Peplis*, L., three specimens only. *E. Peplis*, L., *E. Helioscopia*, L., and *E. hiberna*, L., are quite frequent.

Carex muricata, L. One plant only.

Agrostis Spica-centi, L. Quite abundant this year. A very conspicuous and handsome grass when in flower.

Colium temulentum, L. Quite frequent.

Lolium temulentum, L. Quite frequent.

Holcus mollis, L. A few plants only.

Phragmites communis, Trin. In dry sand. Prof. Porter says "one of its many forms;" but it looks strange in comparison with the specimens from the Southern States.

Andropogon halepensis, Sibth. A few specimens.

Panicum miliacea, L. Quite abundant.

A great many species that are already described in Gray's Manual as introduced plants occurred abundantly both in this and former years, evidently recent importations, but I did not deem it essential to include them in this article. Many strange looking plants have appeared, that have never flowered, hence could not be determined, and some biennials have appeared this year that may flower next, if the winter be not too severe. It would be interesting to know if ballast deposited at other places produces the same kind of plants.—ISAAC C. MARTINDALE, Camden, N. J. September 21, 1876.

P. S.—Since the above was written I collected, near the Wissahickon Station, on the Philadelphia & Reading railroad, about four miles from Philadelphia, *Leonurus glaucescens*, Bunge. This plant is from Northern Asia, and how it could get into the above locality is somewhat of a mystery, as no ballast material has been transported to that neighborhood, and it is not a garden plant, in this country, at least; it is possible, however, that the seeds may have been introduced among the exhibits to the Centennial Exposition, by way of Japan. It is very abundant this year, in the locality above mentioned, and the seeds have fully ripened, but it remains to be seen whether it will reproduce itself another year or not.—I. C. M.